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Some Notes on the Urban Planning of Mediolanum and on the Orientation of its Decumanus

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Abstract

This paper is giving some notes on the town-planning of Mediolanum, that is, of the Roman Milano. In particular, we will discuss the orientation of the main street of the Roman town, the Decumanus. It is possible that the Decumanus of Mediolanum had been oriented along the major southern azimuth of moonrise.

Keywords: Archaeoastronomy, Satellite Images, Roman Town Planning.

Introduction

Mediolanum, the modern Milano, was an important Roman city in the northern Italy. Its place was a settlement of Insubres, founded in the fourth century BC, probably succeeding as the main center of the region to the Etruscan city of Melpum [1]. Conquered by the Romans in 222 BC, the town increased of importance. In 286 AD, Mediolanum became the capital of Western Roman Empire and then a center of the Western Christianity, until its decline during the Gothic War [2-4].

In the modern Milano, we can find some remains of the ancient Roman town-planning. As we have discussed in some previous papers, the Roman founded several of their towns with a precise regular scheme, based on two main streets, the Decumanus Maximus which was crossed by the perpendicular Kardo Maximus at the center of the settlement [5-9]. Usually, these towns had four main gates at the ends of Decumanus and Kardo. In the case of Mediolanum, since it was a “hub” of the Northern Italy, the town had a large number of gates corresponding to the main roads arriving in the city.

It seems that, in the case the location allowed a free orientation of the Decumanus, the direction of this main street was determined according to the azimuth of the rising sun. That is, the Decumanus was pointing, as told by Haverfield in his book on ancient town-planning, "where the sun rises above the horizon on the dawn of some day important in the history of the town" [10]. However, as we will see in this paper, the Decumanus of Milano was probably oriented to the moonrise rather than to the sunrise, because the Decumanus has a direction which is coincident to the southern moonrise azimuth, probably in agreement to the preexisting Celtic layout of the settlement [11].

Ancient history of Mediolanum

About the late fifth and early fourth centuries BC, the Celtic invasion of the Northern Italy accelerated. During this period the new arrivals were so numerous to challenge the Etruscan hegemony [12]. For the ancients, the critical turning point was the fall of the Etruscan city of Melpum in 396 BC [12]. Then, after the fall of the Etruscan hegemony, the area of Mediolanum was occupied by the Celtic Insubres, people that lived in the northern part of Italy called Insubria.

The Latin writer Livy tells that the Gaulish king Ambicatus sent his nephew Bellovesus in Italy at the head of a group of people having origin from Gaulish tribes. Bellovesus founded Mediolanum, reigning Tarquinius Priscus in Rome [13]. The Romans captured the Celtic town in 222 BC; so the Insubres were submitted to Rome, that eventually conquered the region, creating the new province of the Cisalpine Gaul. For what concerns the site of the town, the Roman Latinized its Celtic name, that was Medhelan. That is, "medhe" which became "medio", meaning "middle, center", and "lan" which turned into "lanon", equivalent of Latin "planum", "plain", thus Mediolanon or Mediolanum, was the "town in the midst of the plain". Another meaning is also proposed, that of "sacred place in the midst of the plain", as deduced by some menhirs found in the central part of the city [14-16].

Mediolanum was important for its location as a hub in the road network of northern Italy, in a country rich of wine, crops and fine wool [17]. During the Augustan age, Mediolanum was famous for its schools and, as usual for the Roman towns, possessed a theatre and an amphitheatre. In 286 AD, Diocletian moved the capital of the Western Roman Empire from Rome to Mediolanum. He preferred the seat of Nicomedia in the Eastern Empire, leaving his colleague Maximian at Milan. Maximian built several monuments, a large circus and thermae or "Baths of Hercules", a large complex of imperial palaces and buildings. Moreover, Maximian increased the city surrounding it by a new, larger stone wall.

In 313 AD, the Emperor Constantine issued his Edict in Milan, granting tolerance to all religions within the Empire, allowing Christianity became the dominant religion. At the time of St. Ambrose (bishop 374-397), Mediolanum reached the height of its ancient power [2]. In 402 AD, the city was besieged by the Goths and the Imperial residence was moved to Ravenna. In 452, it was besieged again by Attila, but the real break with its Imperial past occurred in 538, during the Gothic War, when Mediolanum was devastated by Goths [2]. Odoacer as the new king of Italy, moved the capital to Ticinum, the modern Pavia, and the Early Medieval Milan was left to be governed by its archbishops.

The Roman urban planning

Mediolanum had defensive walls surrounding an area smaller than the actual Roman town. Many houses, streets, monuments and civic services, such as the amphitheatre, were outside the walls. A moat was surrounding the walls, supplied by an appropriate water-channel network [18]. As told before, this defensive system was built during the reign of Maximian (296-305 AD). Several gates were present in the Maximian wall, each having its name. There were the Porta Ticinensis, on the Roman road to Ticinium, now Pavia, the Porta Romana, on the road to Placentia and Rome, Porta Argentea on the road to Bergamo, Aquileia and the Eastern Empire, Porta Nova, Porta Erculea, Porta Comacina towards Comum and passes across the Alps, Porta Jovia on the road to Novarium (Novara) and Porta Vercellina also on a road leading to Novara and Vercelli [18]. These gates were monumental in size, equipped with towers, arches, etc. In the Figure 1, we can see the locations of the gates on Google Earth. It is clear from the number of the gates that Mediolanum was an important "hub" of northern Italy. Torino for instance, had only four gates.



Figure 1: The gates in the walls of Mediolanum, the Roman Milano. The satellite image is a courtesy of Google Earth. The orange line is representing the Decumanus. Note that the medieval cathedral of Milano, the Duomo, has a perfect east-west orientation.

In spite of the profound revisions of the streets during the past two centuries, it is possible to see some streets crossing each other perpendicularly. The Forum was in the modern Piazza San Sepolcro, where Decumanus and Kardo were crossing. To the Kardo are corresponding the modern streets: Nerino, Cantù e S. Margerita, prolonged in Via Manzoni. The Decumanus corresponds to Via S. Maria alla Porta, S. Maria Fulcorina, del Bollo, towards the Corso di Porta Romana.

The orientation of the planning

Before the analysis of the orientation of the Milan Decumanus, let us shortly remember that the planning of the Roman towns was based on dividing their areas by two main streets (Decumanus and Kardo) into four parts and by other and parallel streets into square or oblong house-blocks ('insulae'), in a rectangular scheme carried through with some geometrical precision [10]. The two main streets appear to follow some method of orientation connected with augural science. As a rule, one of them runs north and south, the other east and west, and now and again the latter street seems to point to the spot where the sun rises above the horizon on the dawn of some day important in the history of the town. Haverfield defines this Roman town-plan as the "chess-board" pattern [10]. In fact, this planning was also that of the military forts, the Roman Castra and, in general, from land surveying in the process of the division of the soil of provinces and its 'limitation' and 'centuriation' [8,9]. The Decumanus was the main direction of the centuriation used to subdivide the land. The Kardo was usually perpendicular to it.



Figure 2: The satellite image (courtesy of Google Earth) shows two straight lines, one is linking Porta Romana to Porta Vercellina, the other linking Porta Nuova to Porta Ticinensis. The white lines are not perpendicular but are forming an angle of 94°.

Let us consider Decumanus and Kardo of Mediolanum, and imagine the Decumanus as a straight line from Porta Romana to Porta Vercellina, and the Kardo as a second straight line going from Porta Nuova to Porta Ticinensis. If we consider the Decumanus and the Kardo as two straight lines, from gate to gate, we have the Figure 2. In fact, these two straight lines form an angle of 94 degrees, larger than the 90 degrees we are expecting in Roman planning based on a centuriation [8]. In Milano then, it seems that the Kardo and the Decumanus are not perfectly perpendicular. Of course, this could be due to an alteration of one of two streets in the history of the town. However, there is also another possible reason.

Let us consider what Haverfield is telling about Torino, that he is giving as the best example of a Roman town-planning for its regularity. The north and south gates, he tells, are not opposite. "Whether this was the original plan is not clear, nor is the age of the surviving walls and gates quite certain" [10]. So it is possible that the planning of Mediolanum had also Porta Nuova and Porta Ticinensis not opposite. In fact, as we have previously told, it is the Decumanus the more relevant street in the planning of a town, the line that had been determined having a symbolic and augural meaning. Usually, it is considered for the Roman town the augural direction to

the rising sun [10,19], but in the case of Mediolanum, the Decumanus is not oriented to a sunrise, because its direction is larger of any possible sunrise azimuth.

In the Figure 3 we can see the sunrise direction on winter solstice given by SunCalc.net. Also Sollumis.com, another software providing sunrise and sunset azimuths and sun altitudes, is giving a sunrise azimuth on winter solstice of 124° .

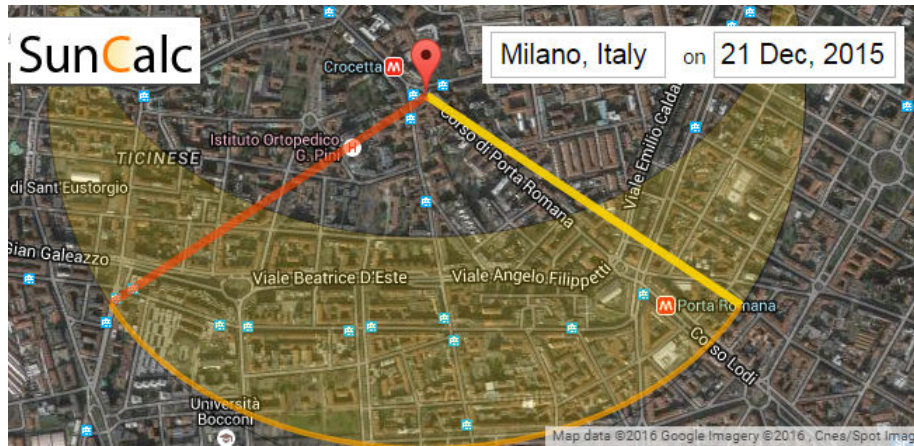


Figure 3: The sunrise azimuth (yellow line) on winter solstice given by SunCalc.net. In the image we can see that this direction is not coincident with the direction of the Decumanus, which is corresponding to Corso di Porta Romana.

Since there is not an alignment to the sunrise, let us consider an alignment to moonrise. For a latitude of about 45° , like that of Milano and Torino, we have that the minor and major northern moonrise azimuths are 47.40° and 65.65° (angles are given from North direction). The minor and major southern moonrise azimuths are 116.35° and 132.58° . For the calculation of moonrise azimuths, we have used the formula given by Jürgen Giesen at his site <http://www.geoastro.de/sunmoonpolar/index.html#Mondwenden>. The reader can find detailed discussion on the moonrise azimuths there.

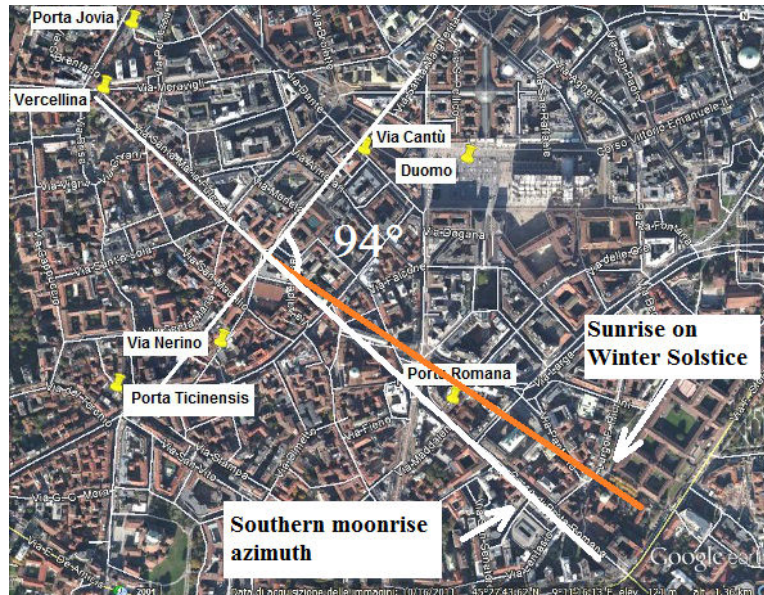


Figure 4: Directions of sunrise on the winter solstice and of the major southern moonrise azimuth. This last direction is coincident to that of the Decumanus.

The Figure 4 is giving the two directions of sunrise on the winter solstice and of the major southern moonrise azimuth. Note that the white line representing this direction of moonrise is coincident to the Decumanus. By the Figures 2 and 4, it seems that there is a possibility this Decumanus had been oriented to an augural ritual connected to the moon, not the sun, in reference to the Celtic origin of the site [11]. Of course, let us note that

the Decumanus could have been oriented following simply a more practical reason linked to the specific site and that the fact of being in the same direction of major southern moonrise is simply a coincidence.

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